Application No.: 10/619408 Docket No.: SIW-063

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) An idle control system applicable to a fuel cell vehicle, the fuel cell vehicle comprising:

a fuel cell for generating electric power by supplying reaction gases using an air supply compressor and a hydrogen supply device;

a driving motor to which generated electric current from the fuel cell is supplied;

a vehicle auxiliary equipment to which generated electric current from the fuel cell is supplied; ~~and~~

a power storage device which is charged by generated electric current from the fuel cell; and

an idle stop determination device which determines whether the fuel cell vehicle is in a predetermined idle mode, at least by determining whether the speed of the fuel cell vehicle is lower than a predetermined value, determining whether the expected power consumption of the driving motor is lower than a predetermined value, or determining whether an electrical power load of the driving motor and/or the vehicle auxiliary equipment is lower than a predetermined value; and

the idle control system for controlling the fuel cell vehicle according to driving modes, wherein,

when the fuel cell vehicle is in a normal driving mode, and not in an idle mode, the idle control system drives the fuel cell to generate electrical power based on electric current corresponding to a required electrical power for driving the driving motor and the auxiliary equipment, and the power storage device assists power generation of the fuel cell by supplying electrical power stored therein to the driving motor and the vehicle auxiliary equipment;

when the fuel cell vehicle is in ~~a~~ the predetermined idle mode, the idle control system stops the fuel cell to stop power generation of the fuel cell by stopping the air compressor; and

while the fuel cell vehicle is in ~~a~~ the predetermined idle mode, and when it is determined that the state of charge of the power storage device falls below a predetermined state of charge of the power storage device, the idle control system drives the fuel cell to generate a current corresponding to the optimum power generation efficiency of the fuel cell.

2. (Currently Amended) An idle control system applicable to a fuel cell according to claim 1, wherein said power generation efficiency of ~~the~~ a fuel cell system is defined by: {(total electric power generated by the fuel cell)–(electric power consumed by the compressor for supplying the reaction gas to fuel the cell)} divided by (total electric power generated by the fuel cell).

3. (Cancelled)

4. (Currently Amended) In a fuel cell vehicle equipped with a fuel cell, an idle control system, a driving motor, a power storage supply, a hydrogen ~~supply~~device, an air compressor and auxiliary equipment, a method of generating electrical current comprising the steps of:

identifying the occurrence of an idle state, said idle state being based on at least one of the speed of said fuel cell vehicle being lower than a ~~pre-determined~~predetermined value, the expected power consumption of the driving motor being lower than a ~~pre-determined~~predetermined value ~~and~~or ~~the~~ an electrical power load of ~~the~~ an electrical load being lower than a ~~pre-determined~~predetermined value;

selecting a power generation mode in response to the occurrence of the idle state; and

adjusting the power generation of the fuel cell based on the selected power generation mode using said idle control system.

5. (Currently Amended) The method of claim 4, wherein the electrical power load of the electrical load includes the power requirements of said driving motor, the power requirements of said air compressor used to supply hydrogen from said hydrogen supply to said fuel cell and the power requirements of said auxiliary equipment in said fuel cell vehicle.

6. (Currently Amended) The method of claim 4 wherein the selection of a power generation mode comprises the further steps of:

selecting an idle stop mode, said idle stop mode being selected based on a determination that electrical power stored in said power storage ~~supply~~ device exceeds a ~~pre-determined~~predetermined parameter; and

stopping the generation of electrical current by said fuel cell.

7. (Currently Amended) The method of claim 6, comprising the further steps of:

identifying a need for increased electrical power while in said idle stop mode; and

exiting said idle stop mode to return to a normal power generation mode, said normal power generation mode supplying electrical current directly from said fuel cell to said driving motor and said auxiliary equipment.

8. (Currently Amended) The method of claim 4 wherein the selection of a power generation mode comprises the further steps of:

selecting an idle charge mode, said idle charge mode being selected based on a determination that said power storage ~~supply~~ device does not exceed a ~~pre-determined~~predetermined parameter; and

adjusting the electrical current generated by the fuel cell according to the optimum power generation efficiency of the fuel cell, said optimum power generation efficiency based on identified parameters.

9. (Currently Amended) The method of claim 8 wherein the adjustment of the electrical current generated by the fuel cell to an optimum level comprises the further steps of:

determining the total electrical power generated by the fuel cell;

subtracting the electrical power consumption of the air compressor;

dividing the result of the total electrical power generated by the fuel cell minus the electrical power consumption of the air compressor by the total ~~generated~~ electrical power generated by the fuel cell and multiplying the overall result to arrive at an efficiency percentage; and

adjusting the power generated by the fuel cell based on said efficiency percentage.

10. (Currently Amended) The method of claim 8 wherein said generated electrical current is stored in said power storage ~~supply~~device.

11. (Currently Amended) The method of claim 8, comprising the further steps of:

identifying a need for increased electrical power while in said idle charge mode; and

exiting said idle charge mode to return to a normal power generation mode, said normal power generation ~~model~~ mode supplying electrical current directly from said fuel cell to said driving motor and said auxiliary equipment.

12. (New) An idle control system applicable to a fuel cell according to claim 1, wherein the optimum power generation efficiency is higher than a power generation efficiency in a normal operating condition of the fuel cell.

13. (New) An idle control system applicable to a fuel cell according to claim 12, wherein the optimum power generation efficiency is a power generation efficiency in a low load condition of the fuel cell.